# NEET (UG) MOCK TEST

## (Physics, Chemistry & Biology)

**Mock Test 2025**

Answer key and solutions will be available on (https://yuvasenacet.com)

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# शिव ● सेना
### उद्धव बाळासाहेब ठाकरे

# NEET (UG) MOCK TEST - 2025
## QUESTION BOOKLET

| Test Booklet Code |
|:---:|
| **A** |

| Test Booklet No. |
|:---:|

| 1 | 2 | 3 | 4 |
|:---:|:---:|:---:|:---:|

(Write this number on
your Answer Sheet)

This Booklet contains 30 pages.
**Do not open this Test Booklet until you are asked to do so.**

## *Important Instructions*

1. The Answer Sheet is given separately along with this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully with blue/black ball point pen only.

2. The test is of 3 hours duration and the Test Booklet contains 180 multiple-choice questions (four options with a single correct answer). 45 questions each in Physics and Chemistry and 90 in Biology.

3. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 720.

4. Use Blue/Black Ball Point Pen only for writing particulars on this page/marking responses on Answer Sheet.

5. Rough work is to be done in the space provided for this purpose in the Test Booklet only.

6. The CODE for this Booklet is A. Make sure that the CODE printed on the Original Copy of the Answer Sheet is the same as that on this Test Booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.

7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Roll No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.

8. Use of white fluid for correction is NOT permissible on the Answer Sheet.

9. Use of Electronic/Manual Calculator is prohibited.

10. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.

11. The candidates will write the Correct Test Booklet Code as given in the Test Booklet/Answer Sheet in the Attendance Sheet.

12. Compensatory time of one hour for examination of three hours (03:00 hrs) duration for PwBD Candidate [having a physical limitation to write] will be given, whether such candidate uses the facility of Scribe or not.
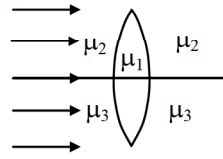
Name of the Candidate (in Capitals): _____

Roll Number    : in figures _____

            : in words _____

Centre of Examination (in Capitals):_____

Candidate's Signature: _____    Invigilator's Signature : _____

Facsimile signature stamp of
Centre Superintendent: _____

1. The amplitude of sound is doubled and the frequency is reduced to one fourth. The intensity of sound at the same point will be

   (A) increased to double.

   (B) increased to four times.

   (C) decreased to half.

   (D) decreased to one fourth.

2. Nickel shows ferromagnetic property at room temperature. If the temperature is increased beyond Curie temperature, then it will show

   (A) anti ferromagnetism

   (B) no magnetic property

   (C) diamagnetism

   (D) paramagnetism

3. The threshold wavelength for photoelectric emission from a material is 5000 Å. $1.25 \times 10^{20}$ photoelectrons will be emitted per second when this metal is illuminated with monochromatic radiation from

   (A) 50 watt infrared lamp.

   (B) 50 watt ultraviolet lamp.

   (C) 1 watt infrared lamp.

   (D) 1 watt ultraviolet lamp.

4. _____ is the wavelength of photon of energy 35 keV.

   (A) $31 \times 10^{-12}$ m
   (B) 35 Å
   (C) $3.54 \times 10^{-11}$ m
   (D) 3.1 Å

5. A double convex lens, made of a material of refractive index $\mu_1$, is placed inside two liquids of refractive indices $\mu_2$ and $\mu_3$, as shown in the figure. ($\mu_3 > \mu_1 > \mu_2$). A wide, parallel beam of light is incident on the lens from the left. The lens will give rise to

   (A) a single convergent beam.

   (B) two different divergent beams.

   (C) a convergent and divergent beam.

   (D) two different convergent beams.

6. The distance covered by a car in time $(3.5 \pm 0.2)$ s is $(28.0 \pm 0.4)$ m. The speed of the car with error limits is:

   (A) $8.0 \pm 0.3$ m/s
   (B) $8.0 \pm 0.6$ m/s
   (C) $8.0 \pm 0.4$ m/s
   (D) $8.0 \pm 0.5$ m/s

7. In Young's experiment, the central bright fringe can be identified

   (A) by using white light instead of monochromatic light.

   (B) as it is narrower than other bright fringes.

   (C) as it is wider than other bright fringes.

   (D) as it has greater intensity than the other bright fringes.

8. $^{22}$Ne nucleus, after absorbing energy decays into two $\alpha$-particles and an unknown nucleus. The unknown nucleus is

   (A) nitrogen
   (B) carbon
   (C) boron
   (D) oxygen

9. Three capacitors of capacitance 4 μF are connected in a circuit. What are their maximum and minimum capacitance values?

(A) 12 μF, 1.33 μF  (B) 12 μF, 1.5 μF  (C) 10 μF, 1.33 μF  (D) 10 μF, 1.5 μF

10. The magnetic field in a plane electromagnetic wave is given by,

$B_y = 2 \times 10^{-7} \sin(\pi \times 10^3 x + 3\pi \times 10^{11} t) T$

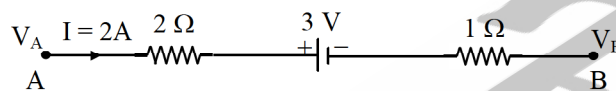Calculate the wavelength.

(A) $\pi \times 10^{-3}$ m  (B) $\pi \times 10^3$ m  (C) $2 \times 10^{-3}$ m  (D) $2 \times 10^3$ m

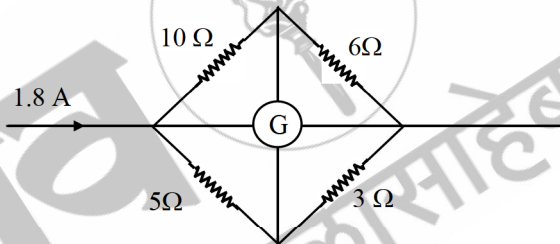11. An ac generator has 6 poles produces a frequency of 50 Hz. What will be its rotation per second?

(A) 12.33  (B) 13.38  (C) 15.44  (D) 16.67

12. The potential difference ($V_A - V_B$) between the points A and B in the given figure is



(A) +9 V  (B) −3 V  (C) +3 V  (D) +6 V

13. In the given circuit, if the galvanometer shows no deflection, the current through the 3 Ω resistor will be



(A) 1.66 A  (B) 0.83 A  (C) 0.5 A  (D) 1.2 A

14. One mole of an ideal gas at an initial temperature of T K does 6R joules of work adiabatically. If the ratio of specific heats of this gas at constant pressure and at constant volume is 5/3, the final temperature of gas will be

(A) (T + 2.4) K  (B) (T − 2.4) K  (C) (T + 4) K  (D) (T − 4) K

15. Electromagnetic (EM) waves can travel through a vacuum. This means:

(A) They require a medium like air or water to propagate.

(B) Their electric and magnetic fields oscillate parallel to the direction of wave propagation.

(C) They travel at the speed of light, approximately $3 \times 10^8$ m/s in a vacuum.

(D) Their energy is solely carried by the electric field, not the magnetic field.

16. In a thermodynamic process, pressure of a fixed mass of a gas is changed in such a manner that the gas releases 10 joule of heat and 15 joule of work was done on the gas. If the initial internal energy of the gas was 25 joules, then the final internal energy will be

(A) −18 J  (B) 4 J  (C) 10 J  (D) 30 J

17. The difference between oblique projectile motion and horizontal projectile motion is

(A) equation of trajectory for oblique projectile motion is parabola, while that of horizontal projectile motion is hyperbola.

(B) equation of trajectory for oblique projectile motion is hyperbola, while that of horizontal projectile motion is parabola.

(C) equation of trajectory for oblique projectile depends upon angle of projection while that of horizontal projection is independent of angle of projection.

(D) direction of instantaneous velocity changes continuously for oblique projectile motion but is unchanged for horizontal projectile motion.

18. An electric dipole consists of charges +2e and –2e, separated by 1.2 nm, placed in an electric field of strength $6 \times 10^5$ N/C. Calculate the potential energy of the dipole when its dipole moment is:

(I) aligned parallel to the electric field   (II) oriented at 60° to the electric field
(III) aligned antiparallel to the electric field

(A) $-1.15\times10^{-22}$ J, $-2.3\times10^{-22}$ J, $2.3\times10^{-22}$ J   (B) $2.3\times10^{-22}$ J, 0, 0

(C) 0, $-2.3\times10^{-22}$ J, 0   (D) $-2.3\times10^{-22}$ J, $-1.15\times10^{-22}$ J, $2.3\times10^{-22}$ J

19. Breakdown voltage of a zener diode is 8 volt. It can regulate the voltage output of a power supply

(A) below 8 volt only.   (B) above 8 volt upto a certain maximum voltage.

(C) from 5 volt to 8 volt.   (D) from zero volt to infinite volt.

20. Which of the following combinations of physical quantities have same dimensions?

(A) Power, energy, torque.   (B) Acceleration, force, momentum.

(C) Pressure, density, velocity.   (D) Work, kinetic energy, potential energy.

21. A wheel starts from rest, and its angular displacement (in radians) is given by $\theta = \dfrac{t^2}{8} + \dfrac{t}{4}$. What is the angular velocity of the wheel at the end of 3 seconds?

(A) 1.0 rad/s   (B) 1.5 rad/s   (C) 1.25 rad/s   (D) 2.0 rad/s

22. Maxwell's modification of Ampere's circuital law addresses its limitation by including:

(A) The effect of magnetic monopoles, which Ampere's law overlooks.

(B) The displacement current, which accounts for changing electric fields.

(C) The resistance of the medium, which Ampere's law ignores.

(D) The steady-state current only, excluding time-varying fields.

23. Infinite number of bodies, each of mass 2 kg, are situated on X-axis at distance 1 m, 2 m, 4 m, 8 m, ..... respectively, from the origin. The resulting gravitational potential due to this system at the origin will be

(A) $-G$   (B) $-\dfrac{8}{3}G$   (C) $-\dfrac{4}{3}G$   (D) $-4G$

24. A ray of light passes through an equilateral glass prism in such a manner that the angle of incidence is equal to the angle of emergence and each of these angles is equal to $\frac{4}{3}$ of the angle of the prism. The angle of deviation is

(A)   45°      (B)   39°      (C)   100°      (D)   30°

25. The mass of a lift is 2000 kg. When the tension in the supporting cable is 28000 N, then its acceleration is

(A)   4 m s$^{-2}$ upwards                 (B)   4 m s$^{-2}$ downwards

(C)   14 m s$^{-2}$ upwards                (D)   30 m s$^{-2}$ downwards

26. A satellite of mass m is moving round the earth in a circular orbit of radius r under a centripetal force of $-\alpha e^{-b}/r^2$, where α and b are constants. The total energy of the particle is

(A)   zero      (B)   $-\alpha b/r$      (C)   $-\dfrac{\alpha e^{-b}}{2r^2}$      (D)   $-\dfrac{\alpha e^{-b}}{2r}$

27. A vertical spring of force constant 300 N/m has a mass of 2 kg attached to its free end. The other end of the spring is fixed to the ceiling, and the mass is slightly displaced downward and released. What is the time period of oscillation of the mass?

(A)   0.8 s      (B)   1.0 s      (C)   0.5 s      (D)   1.2 s

28. **Assertion:** The logic gate AND can be built using a transistor in CE (Common Emitter) configuration.

**Reason:** The transistor in CE configuration provides a high input impedance and a 180° phase difference between input and output voltage.

(A)   Assertion is True, Reason is True; Reason is a correct explanation for Assertion.

(B)   Assertion is True, Reason is True; Reason is not a correct explanation for Assertion.

(C)   Assertion is True, Reason is False.

(D)   Assertion is False, Reason is False.

29. Figures (i) and (ii) below show the displacement-time graphs of two particles moving along the X-axis. We can say that
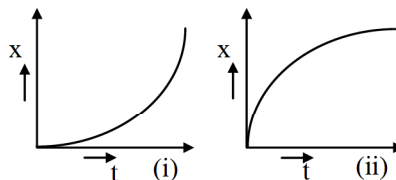


(A)   both the particles are having a uniformly retarded motion.

(B)   both the particles are having a uniformly accelerated motion.

(C)   particle (i) is having a uniformly accelerated motion while particle (ii) is having a uniformly retarded motion.

(D)   particle (i) is having a uniformly retarded motion while particle (ii) is having a uniformly accelerated motion.

30. A thin equi-convex lens had focal length 20 cm and refractive index 1.5. One of its faces is now silvered and for an object placed at a distance u in front of it, the image coincides with the object. The value of u is

    (A) 20 cm       (B) 15 cm       (C) 10 cm       (D) 5 cm

31. A bar magnet of length $l$ and magnetic dipole moment M is bent in the form of an arc as shown in figure. The new magnetic dipole moment will be

    (A) M

    (B) $\frac{3}{\pi} M$

    (C) $\frac{2}{\pi} M$

    (D) $\frac{M}{2}$
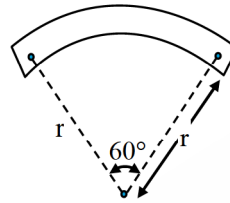
32. **Assertion:** An object can have acceleration even if its speed is constant.

    **Reason:** A body undergoes centripetal acceleration when it moves in a circular path, even if its speed does not change.

    (A) Assertion is True, Reason is True; Reason is a correct explanation for Assertion.

    (B) Assertion is True, Reason is True; Reason is not a correct explanation for Assertion.

    (C) Assertion is True, Reason is False.

    (D) Assertion is False, Reason is True.

33. To vaporize a liquid, the energy supplied is calculated under:

    (A) Constant pressure and variable temperature.

    (B) Standard pressure and constant volume.

    (C) Constant temperature and constant pressure.

    (D) Variable pressure and constant temperature.

34. Two drops of the same radii are falling through air with a steady velocity of 9 cm per second. If the two drops coalesce, the terminal velocity would be

    (A) 18 cm/s       (B) 14.3 cm/s       (C) 11.3 cm/s       (D) 9 cm/s

35. The energy levels of the hydrogen spectrum are shown in the figure. There are some transitions A, B, C, D and E. Transition A, B and C respectively represent
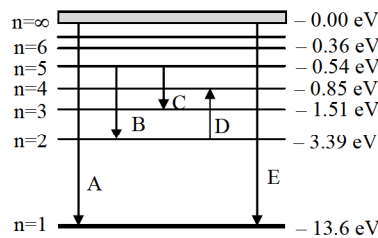
(A) First member of Lyman series, third spectral line of Balmer series and the second spectral line of Paschen series.

(B) Ionization potential of hydrogen, second spectral line of Balmer series and third spectral line of Paschen series.

(C) Series limit of Lyman series, third spectral line of Balmer series and second spectral line of Paschen series.

(D) Series limit of Lyman series, second spectral line of Balmer series and third spectral line of Paschen series.

36. Two identical balls A and B having velocities of 0.5 m/s and −0.3 m/s respectively collide elastically in one dimension. The velocities of A and B after the collision respectively will be

(A) 0.3 m/s and 0.5 m/s        (B) −0.5 m/s and 0.3 m/s

(C) 0.5 m/s and −0.3 m/s       (D) −0.3 m/s and 0.5 m/s

37. An e.m.f. of $E = 110\sin\frac{\pi}{6}$ is applied across a resistor resulting in to flow of current in it. If at any certain instant current $I = 90\sin\frac{\pi}{6}$ is flowing through the resistor, then the instantaneous power generated in it will be

(A) 4.5 kW       (B) 2.5 kW       (C) 1.5 kW       (D) 3.5 kW

38. The electric flux entering and leaving a closed surface are $15 \times 10^3$ and $12 \times 10^3$ MKS units respectively. What is the net charge inside the surface?

(A) $-2.65 \times 10^{-7}$ C    (B) $2.65 \times 10^{-7}$ C    (C) $-3.18 \times 10^{-7}$ C    (D) $3.18 \times 10^{-7}$ C

39. Sum of magnitude of two forces is 25 N. The resultant of these forces is normal to the smaller force and has a magnitude of 10 N. Then the two forces are

(A) 14.5 N, 10.5 N    (B) 16 N, 9 N      (C) 13 N, 12 N      (D) 20 N, 5 N

40. A solid rod is fixed rigidly at two ends so as to prevent its thermal expansion. If L, α and Y respectively denote the length of the rod, coefficient of linear thermal expansion and Young's modulus of its material, then for an increase in temperature of the rod by ΔT, the longitudinal stress developed in the rod is

(A) independent of L.                 (B) inversely proportional to α.

(C) inversely proportional to Y.       (D) directly proportional to $\frac{\Delta T}{Y}$.

41. A tuning fork is used to produce resonance in a glass tube. The length of the air column in this tube can be adjusted by a variable piston. At room temperature of 27 °C two successive resonances are produced at 20 cm and 73 cm of column length. If the frequency of the tuning fork is 320 Hz, the velocity of sound in air at 27 °C is

(A) 330 m/s      (B) 339 m/s      (C) 350 m/s      (D) 300 m/s

42. A square loop of side 2.0 m and resistance 10 Ω is placed in a magnetic field of induction 0.3 T as shown below. The work done in pulling the loop out of the bounded field slowly and uniformly in 4 s is

$$\times \ \times \ \times \ \times$$
$$\times \ \times \ \times \ \times \quad \longrightarrow v$$
$$\times \ \times \ \times \ \times$$
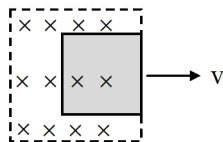
- (A) $0.3 \times 10^{-2}$ J
- (B) $0.6 \times 10^{-2}$ J
- (C) $1.8 \times 10^{-2}$ J
- (D) $3.6 \times 10^{-2}$ J

43. Two charges $q_1 = 12$ nC and $q_2 = -12$ nC are placed 10 cm apart. The potential at point A between them at a distance 6 cm from $q_1$, on the line joining the two charges will be

- (A) 450 V
- (B) $-450$ V
- (C) 900 V
- (D) $-900$ V

44. The temperature dependence of resistances of Cu and undoped Si in the temperature range 300-400 K, is best described by

- (A) linear increase for Cu, exponential increase for Si.
- (B) linear increase for Cu, exponential decrease for Si.
- (C) linear decrease for Cu, linear decrease for Si.
- (D) linear increase for Cu, linear increase for Si.

45. A small particle with charge few μC experiences magnetic force in the presence of magnetic field. Which of the following statement is correct?

- (A) The particle is moving and magnetic field is parallel to velocity.
- (B) The particle is stationary and magnetic field is perpendicular.
- (C) The particle is moving and magnetic field is perpendicular to the velocity.
- (D) The particle is stationary and magnetic field is parallel.

46. $A_{2(g)} + B_{2(g)} \rightleftharpoons 2AB_{(g)}$

In this reaction when pressure increases, _____.

- (A) more $A_2$ is formed
- (B) more $B_2$ is formed
- (C) more AB is formed
- (D) the reaction direction does not change

47. Given below are two statements:

**Statement I:** As compared to the other group 14 elements, carbon has the maximum tendency to show catenation.

**Statement II:** Carbon has high tendency to form pπ – pπ multiple bonds with other elements.

In the light of the above statements, choose the **most appropriate** answer from the options given below:

- (A) Both Statement I and Statement II are false.
- (B) Statement I is correct but Statement II is false.
- (C) Statement I is incorrect but Statement II is true.
- (D) Both Statement I and Statement II are true.

48. Which one of the following complexes is an outer orbital complex?

(Atomic numbers: $Mn = 25, Fe = 26, Co = 27, Ni = 28$)

(A)  $[Co(NH_3)_6]^{3+}$   (B)  $[Mn(CN)_6]^{4-}$   (C)  $[Fe(CN)_6]^{4-}$   (D)  $[Ni(NH_3)_6]^{2+}$

49. **Assertion:** Solubility of isomeric alcohols increases with an increase in its branching.

**Reason:** With an increase in branching, the surface area of the non-polar hydrocarbon decreases.

(A)  Assertion and Reason are true. Reason is the correct explanation of Assertion.

(B)  Assertion and Reason are true. Reason is not the correct explanation of Assertion.

(C)  Assertion is true. Reason is false.

(D)  Assertion is false. Reason is true.

50. Match the following:

|      | Ppt. obtained |      | Colour |
|------|---------------|------|--------|
| i.   | PbS           | a.   | White  |
| ii.  | $BaCO_3$      | b.   | Yellow |
| iii. | $Fe(OH)_3$    | c.   | Black  |
| iv.  | $As_2S_3$     | d.   | Brown  |

(A)  i – c, ii – a, iii – d, iv – b   (B)  i – d, ii – a, iii – c, iv – b

(C)  i – d, ii – b, iii – c, iv – a   (D)  i – c, ii – a, iii – b, iv – d

51. Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**:

**Assertion A:** 50 $dm^3$ of $N_2$ gas and 50 $dm^3$ of CO gas at STP contain the same number of molecules.

**Reason R:** At STP, if same volume is occupied by the gases the number of molecules are same.

In the light of the above statements, choose the CORRECT answer from the options given below:

(A)  Assertion and Reason are true. Reason is not the correct explanation of Assertion.

(B)  Assertion is true. Reason is false.

(C)  Assertion is false. Reason is true.

(D)  Assertion and Reason are true. Reason is the correct explanation of Assertion.

52. If $2CH_3COOH + 2OH^- \longrightarrow 2CH_3COO^- + 2H_2O + q_1$,

$2H^+ + 2OH^- \longrightarrow 2H_2O + q_2$,

then the enthalpy change for the reaction; $CH_3COOH \longrightarrow CH_3COO^- + H^+$ is equal to _____.

(A)  $\dfrac{q_1 + q_2}{2}$   (B)  $-\left(\dfrac{q_1 - q_2}{2}\right)$   (C)  $\left(\dfrac{q_1 - q_2}{2}\right)$   (D)  $2(q_2 - q_1)$

53. 2.5 g of an organic compound purified from human bone gave 3.465 g of magnesium pyrophosphate ($Mg_2P_2O_7$) by usual quantitative analysis. Find the percentage of phosphorus in the compound.

(A)  12.92 %   (B)  19.38 %   (C)  38.81 %   (D)  58.13 %

54. The graph below represents the energy profiles of two different reactions A and B, respectively. Which of the following statements would be an appropriate conclusion?
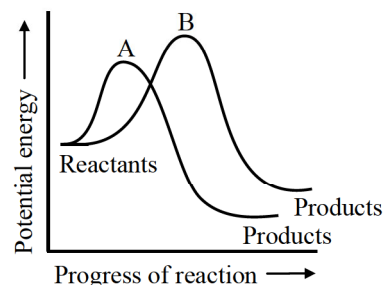
(A) Reaction A is faster and less exothermic than reaction B.

(B) Reaction A is slower and less exothermic than reaction B.

(C) Reaction A is faster and more exothermic than reaction B.

(D) Reaction A is slower and more exothermic than reaction B.



55. In which case, formation of butanenitrile is possible?

(A) $C_3H_7Br + KCN$

(B) $C_4H_9Br + KCN$

(C) $C_3H_7OH + KCN$

(D) $C_4H_9OH + KCN$

56. The boiling point of toluene is 383.8 K. When 2.5 g of a non-volatile solute was dissolved in 100 g of toluene, the boiling point is raised to 385.0 K. The molar mass of the solute is _____.

($K_b$ for benzene $- 3.4$ K kg mol$^{-1}$)

(A) 7.1 g mol$^{-1}$     (B) 0.71 g mol$^{-1}$     (C) 71 g mol$^{-1}$     (D) 1.2 g mol$^{-1}$

57. If the given four electronic configurations

I.    $n = 4, l = 1$            II.    $n = 4, l = 0$

III.   $n = 3, l = 2$           IV.   $n = 3, l = 1$

are arranged in order of increasing energy, then the order will be _____.

(A) IV < II < III < I

(B) II < IV < I < III

(C) I < III < II < IV

(D) III < I < IV < II

58. Match the following.

| | Column I | | Column II |
|---|---|---|---|
| i. | $BCl_3$ | a. | $sp^3$ |
| ii. | $BrCl_3$ | b. | $sp^3d^2$ |
| iii. | $PH_3$ | c. | $sp^3d$ |
| iv. | $[SbCl_5]^{2-}$ | d. | $sp^2$ |

(A) i – d, ii – c, iii – a, iv – b

(B) i – a, ii – b, iii – c, iv – d

(C) i – d, ii – b, iii – a, iv – c

(D) i – b, ii – d, iii – c, iv – a

59. Consider the following reaction:

$$\langle\text{benzene}\rangle\text{--N(CH}_3)_2 + Na^+SO_3^- \text{--}\langle\text{benzene}\rangle\text{--N}_2^+Cl^- \xrightarrow{OH^-} X$$
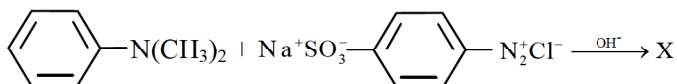
The product X is used _____.

(A) in protein estimation as an alternative to ninhydrin

(B) in laboratory test for phenols

(C) as food grade colourant

(D) in acid base titration as an indicator

60. The conductivity measurement of a coordination compound of cobalt(III) shows that it dissociates into 3 ions in solution. The compound is _____.

    (A) Hexaamminecobalt(III) chloride          (B) Pentaamminesulphatocobalt(III) chloride

    (C) Pentaamminechloridocobalt(III) sulphate   (D) Pentaamminechloridocobalt(III) chloride

61. Which of the following statements is CORRECT?

    (A) +2 is a common oxidation state for group 15 elements.

    (B) Bismuth mostly forms compounds with −3 oxidation state.

    (C) Group 15 elements do not show negative oxidation states.

    (D) P can exist in +4 oxidation state.

62. Match the following.

| | Column 'A' | | Column 'B' |
|---|---|---|---|
| i. | Benzaldehyde + acetone $\xrightarrow[\Delta]{\text{dil NaOH}}$ | a. | Cross Cannizzaro reaction |
| ii. | Toluene $\xrightarrow{\text{CrO}_2\text{Cl}_2 \text{ in CCl}_4}$ Benzaldehyde | b. | Cannizzaro reaction |
| iii. | Benzaldehyde + formaldehyde $\xrightarrow[\text{NaOH, }\Delta]{\text{50\% aq}}$ | c. | Claisen reaction |
| iv. | Acetaldehyde + acetone $\xrightarrow[\Delta, \text{ H}^+]{\text{dil NaOH}}$ | d. | Etard reaction |
| | | e. | Aldol condensation |

    (A) i - d, ii - e, iii - b, iv - c          (B) i - e, ii - c, iii - a, iv - b

    (C) i - e, ii - a, iii - c, iv - d          (D) i - c, ii - d, iii - a, iv − e

63. Identify the product 'B' in the following reaction:

$$2\text{But-1-ene} \xrightarrow[\text{peroxide}]{\text{HBr}} 2\text{A} \xrightarrow[\text{dry ether}]{\text{Na}} \text{B}$$
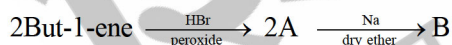
    (A) 1-Bromobutane              (B) 2,3-Dibromohexane

    (C) 2,3-Dimethylbutane          (D) n-Octane

64. The oxidation number of sulphur in $S_8$, $S_2F_2$, $H_2S$ respectively are _____.

    (A) 0, +1 and −2      (B) +2, +1 and −2      (C) 0, +1 and +2      (D) −2, +1 and −2

65. [X] + dil $H_2SO_4 \longrightarrow$ [Y]: Colourless, suffocating gas

    [Y] + $K_2Cr_2O_7$ + $H_2SO_4 \longrightarrow$ Green colouration of solution
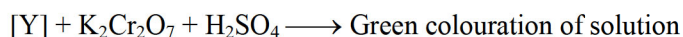
    Then, [X] and [Y] are _____.

    (A) $SO_3^{2-}$, $SO_2$      (B) $Cl^-$, HCl      (C) $S^{2-}$, $H_2S$      (D) $CO_3^{2-}$, $CO_2$

66. During titration of oxalic acid with acidified $KMnO_4$, the oxidation number of carbon atom changes from _____.

    (A) +4 to +2      (B) +3 to +4      (C) +2 to +4      (D) −4 to −2

67. The reduction potential of metal electrode is given as $E_{M^{n+}/M} = E^o_{M^{n+}/M} - \dfrac{0.059}{n} \log \dfrac{1}{[M^{n+}]}$
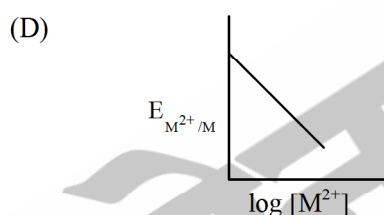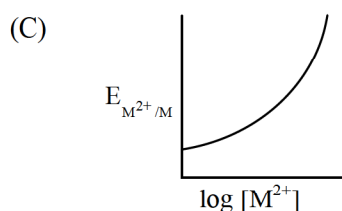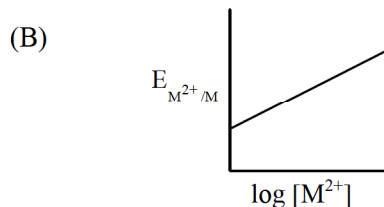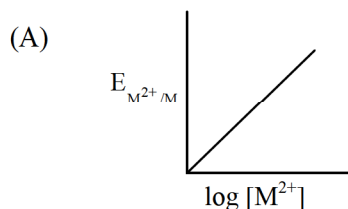
Consider n = 2. The graph of $E_{M^{2+}/M}$ versus $\log[M^{2+}]$ is:

(A)



(B)



(C)



(D)



68. Which of the following sets contain only nucleophiles?

(A) $H_2O$, $SO_3$, $H_3O^+$

(B) $NH_3$, $H_2O$, $ROH$

(C) $NH_3$, $H_2O$, $AlCl_3$

(D) $CN^-$, $SO_3$, $OH^-$

69. The empirical formula and molecular mass of a compound are $CH_2O$ and 270 g respectively. What will be the molecular formula of the compound?

(A) $C_9H_{18}O_9$

(B) $CH_2O$

(C) $C_6H_{12}O_6$

(D) $C_2H_4O_2$

70. The rate constant of a zero order reaction is $0.3$ mol $dm^{-3}$ $hr^{-1}$. If the concentration of the reactant after 48 minutes is $0.05$ mol $dm^{-3}$, then its initial concentration would be _____.

(A) $0.01$ mol $dm^{-3}$

(B) $0.15$ mol $dm^{-3}$

(C) $0.29$ mol $dm^{-3}$

(D) $4.00$ mol $dm^{-3}$

71. Arrange the following alcohols in the decreasing order of their reactivity towards the Lucas reagent.

i.



ii.



iii.



iv. $CH_3OH$
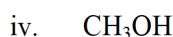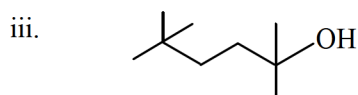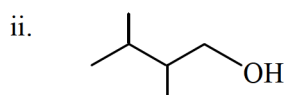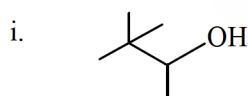
(A) iv > iii > ii > i

(B) iii > i > ii > iv

(C) i > iii > ii > iv

(D) ii > i > iii > iv

72. Consider two processes:

A : q = 54 J, w = −238 J

B : q = −128 J, w = 462 J

Find the CORRECT statement.

(A) Process A involves evolution of heat.

(B) Process B involves absorption of heat.

(C) Process A involves decrease in internal energy of the system.

(D) Process B involves no change in internal energy of the system.

73. Which of the following is 4-ethyl-2-methylhexane?

(A)
$$CH_3 - CH_2 - \underset{\underset{CH_2-CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - CH_2 - CH_3$$

(B)
$$CH_3 - CH_2 - CH - \underset{\underset{CH_2-CH_3}{|}}{\overset{\overset{CH_3}{|}}{CH}} - CH_2 - CH_3$$

(C)
$$CH_3 - \underset{\underset{CH_3}{|}}{CH} - \underset{\underset{CH_2-CH_3}{|}}{CH} - CH_2 - CH_2 - CH_3$$

(D)
$$CH_3 - CH_2 - \underset{\underset{CH_2-CH_3}{|}}{CH} - CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH_3$$
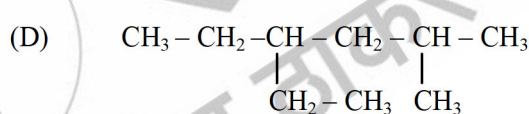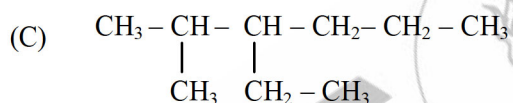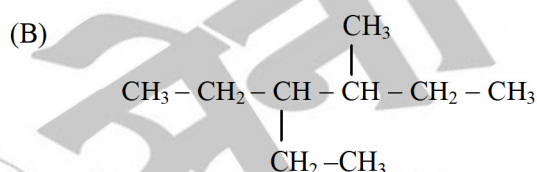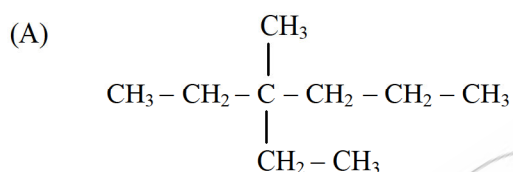
74. When 50 mL of 11.1% (w/v) $CaCl_2$ solution is mixed with 50 mL of 10.6% (w/v) $Na_2CO_3$ solution, what is the mass of $CaCO_3$ precipitate formed?
(Ca = 40, C = 12, O = 16, Na = 23, Cl = 35.5)

(A) 5 g      (B) 11 g      (C) 22 g      (D) 3.5 g

75. Which one has the highest boiling point?

(A) He      (B) Ne      (C) Kr      (D) Xe
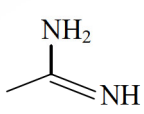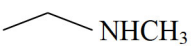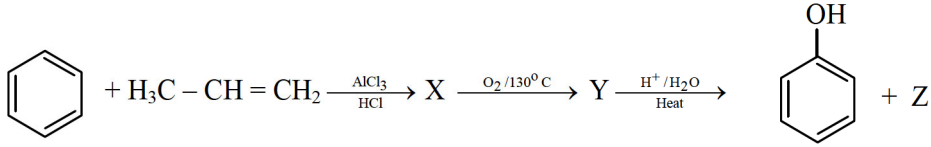
76. The CORRECT order of spin-only magnetic moments among the following is _____.

(Atomic number : Mn = 25, Co = 27, Ni = 28, Zn = 30)
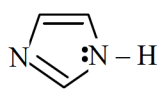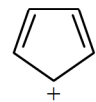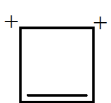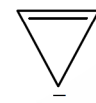
(A) $[ZnCl_4]^{2-} > [NiCl_4]^{2-} > [CoCl_4]^{2-} > [MnCl_4]^{2-}$

(B) $[CoCl_4]^{2-} > [MnCl_4]^{2-} > [NiCl_4]^{2-} > [ZnCl_4]^{2-}$

(C) $[NiCl_4]^{2-} > [CoCl_4]^{2-} > [MnCl_4]^{2-} > [ZnCl_4]^{2-}$

(D) $[MnCl_4]^{2-} > [CoCl_4]^{2-} > [NiCl_4]^{2-} > [ZnCl_4]^{2-}$

77. Which of the following acids has the smallest dissociation constant?

(A) $CH_3CHFCOOH$      (B) $FCH_2CH_2COOH$

(C) $BrCH_2CH_2COOH$      (D) $CH_3CHBrCOOH$

78. Which of the following amino acid has pH greater than 7?

(A) Glutamic acid      (B) Lysine
(C) Glycine      (D) Alanine

79. The colour of $KMnO_4$ is due to _____.

(A) $M \rightarrow L$ charge transfer transition      (B) d - d transition
(C) $L \rightarrow M$ charge transfer transition      (D) $\sigma - \sigma^*$ transition

80. A certain radar system operates at a frequency of 5 GHz (gigahertz). Find the wavelength of the electromagnetic waves used in this radar system. [Speed of light, $c = 3.0 \times 10^8 \text{ m s}^{-1}$]

(A) 6 cm      (B) 0.6 m      (C) 6 mm      (D) 60 cm

81. Find the INCORRECT arrangement with respect to the increasing order of atomic/ionic radii.

(A) $I^+ < I < I^-$      (B) $O < N < P$
(C) $Mg^{2+} < Na^+ < Cl^-$      (D) $Li < Be < B$

82. Ionic product of water increases, if _____.

(A) pressure is reduced      (B) $H^+$ is added
(C) $OH^-$ is added      (D) temperature increases

83. Equivalent conductivity at infinite dilution for sodium-potassium oxalate $((COO^-)_2Na^+K^+)$ will be _____. (given, molar conductivities of oxalate, $K^+$ and $Na^+$ ions at infinite dilution are 148.2, 73.5, 50.1 S cm$^2$ mol$^{-1}$, respectively)

(A) 271.8 S cm$^2$ eq$^{-1}$      (B) 67.95 S cm$^2$ eq$^{-1}$
(C) 543.6 S cm$^2$ eq$^{-1}$      (D) 135.9 S cm$^2$ eq$^{-1}$

84. The increasing order of basicity of the following compounds is _____.



(A) i < ii < iii < iv      (B) ii < i < iii < iv      (C) ii < i < iv < iii      (D) iv < ii < i < iii

85. The CORRECT order of decreasing bond angle is _____.

(A) $SF_6 > CCl_4 > BCl_3 > BeCl_2$      (B) $BeCl_2 > BCl_3 > CCl_4 > SF_6$
(C) $SF_6 > CCl_4 > BeCl_2 > BCl_3$      (D) $BCl_3 > BeCl_2 > SF_6 > CCl_4$

86. The products X and Z in the following reaction sequence are _____.



(A) isopropylbenzene and acetone      (B) cumene peroxide and acetone
(C) isopropylbenzene and isopropyl alcohol      (D) phenol and acetone

87. A solution of $CaF_2$ is found to contain $6 \times 10^{-4}$ M of $F^-$ ions. $K_{sp}$ of $CaF_2$ is _____.

(A)  $8.0 \times 10^{-12}$

(B)  $1.08 \times 10^{-10}$

(C)  $3.0 \times 10^{-11}$

(D)  $6.0 \times 10^{-11}$

88. Which of the following systems are aromatic?

i.

ii.

iii.

iv.

(A)  i, ii

(B)  i, iii

(C)  i, iv

(D)  ii, iv

89. The values of ΔH and ΔS of a certain reaction are $-525$ kJ $mol^{-1}$ and $-35$ kJ $mol^{-1}$ $K^{-1}$ respectively. The temperature below which the reaction is spontaneous is _____.

(A)  100 K

(B)  15 °C

(C)  15 K

(D)  150 °C

90. 3-Methylpent-2-ene on reaction with HBr in presence of peroxide forms an addition product. The number of possible stereoisomers for the product is _____.

(A)  six

(B)  zero

(C)  two

(D)  four

91. Formation of interfascicular cambium from fully developed parenchyma cells is an example of

(A)  Dedifferentiation

(B)  Maturation

(C)  Differentiation

(D)  Redifferentiation

92. Test tube baby means a baby born when

(A)  it develops from a non-fertilized egg

(B)  it developed in a test tube

(C)  it is developed through tissue culture method

(D)  the ovum is fertilised externally and thereafter gets implanted in the uterus

93. If in a normal menstruating woman, menses occur on 5th April, what will be the expected date of ovulation?

(A)  10th April

(B)  18th April

(C)  29th April

(D)  14th April

94. Photosynthetically Active Radiation (PAR) has the following range of wavelengths.

(A)  $340 - 450$ nm

(B)  $400 - 700$ nm

(C)  $500 - 600$ nm

(D)  $450 - 950$ nm

95.



Choose the correct classification of the given picture of the animal.

|  | Phylum | Class | Order | Family | Genus | Species |
|---|---|---|---|---|---|---|
| (A) | Chordata | Vertebrata | Primata | Felidae | *Panthera* | *leo* |
| (B) | Chordata | Mammalia | Carnivora | Felidae | *Panthera* | *leo* |
| (C) | Vertebrata | Mammalia | Carnivora | Canidae | *Canis* | *leo* |
| (D) | Vertebrata | Mammalia | Primata | Canidae | *Canis* | *leo* |

96. A fall in glomerular filtration rate activates _____.

(A) Adrenal medulla to release adrenaline.

(B) Juxtaglomerular cells to release renin.

(C) Posterior pituitary to release vasopressin.

(D) Adrenal cortex to release aldosterone.

97. In an experiment, DNA was found to have 31% adenine and 19% guanine. The percentage of cytosine shall be

(A) 38%   (B) 31%   (C) 19%   (D) 62%

98. Match the organs of the cockroach (Column I) with their respective segment wise locations (Column II):

| | Column I (Organ) | | Column II (Location) |
|---|---|---|---|
| i. | Testes | a. | 7, 8, 9th abdominal segments |
| ii. | Ovaries | b. | 4 – 6th abdominal segments |
| iii. | Mushroom shaped gland | c. | 2 – 6th abdominal segments |
| iv. | Genital pouch in male | d. | 6, 7th abdominal segments |

(A) i – b, ii – d, iii – a, iv – c

(B) i – b, ii – c, iii – d, iv – a

(C) i – c, ii – b, iii – a, iv – d

(D) i – d, ii – a, iii – b, iv – c

99. Which one of the following pairs correctly matches a hormone with a disease resulting from its deficiency?

(A) Luteinizing Hormone - Failure of ovulation

(B) Insulin - Diabetes insipidus

(C) Thyroxine - Tetany

(D) Parathyroid Hormone – Diabetes mellitus

100. Which of the following had the smallest brain capacity?

    (A)    *Homo erectus*        (B)    *Homo sapiens*

    (C)    *Homo neanderthalensis*    (D)    *Homo habilis*

101. Read the given statements.

i. It is motile.

ii. It is unicellular and microscopic.

iii. It belongs to class Chlorophyceae.

    The alga described in the given statements is _____.

    (A)    *Chara*    (B)    *Euglena*    (C)    *Volvox*    (D)    *Chlamydomonas*

102. In the structure of sarcomere, thick filaments in dark bands are held together by

    (A)    'Z' line    (B)    'M' line    (C)    'A' line    (D)    'I' line

103. In the floral formula given below for family Gramineae, identify the missing symbol and select the correct option.

$$Br \, \% \, \male \, P_{2-3 \, (lodicules)} \, \underline{\hspace{1cm}} \, \underline{G}_1$$

    (A)    $A_{1-4}$    (B)    $A_{3-6}$    (C)    $A_{2-5}$    (D)    $A_{3-7}$

104. Synapsis means

    (A)    zig zag junctions in cardiac muscle fibres.

    (B)    crossing over between non-homologous chromosomes.

    (C)    junction between axon and dendrites of two different neurons.

    (D)    pairing of homologous chromosomes.

105. An alga which can be employed as food for human beings is

    (A)    *Ulothrix*    (B)    *Chlorella*    (C)    *Spirogyra*    (D)    *Polysiphonia*

106. Given below are two statements:

**Statement I:** The alien DNA is cloned in the host organism by integrating it in host DNA.

**Statement II:** The alien DNA has specific DNA sequence called origin of replication, which helps it join to host genome.

In the light of the above statements, choose the most appropriate answer from the options given below:

    (A)    Statement I is correct, Statement II is incorrect.

    (B)    Statement I is incorrect, Statement II is correct.

    (C)    Both Statements I and II are correct.

    (D)    Both Statements I and II are incorrect.

107. Which of the following statements is correct?

(A) Some of the organisms can fix atmospheric nitrogen in specialized cells called sheath cells.

(B) Fusion of two cells is called Karyogamy.

(C) Fusion of protoplasm between two motile or non-motile gametes is called plasmogamy.

(D) Organisms that depend on living plants are called saprophytes.

108. Total 960 plants were obtained in $F_2$ generation when a pure tall pea plant with round seeds is crossed with a dwarf plant with wrinkled seeds. Select the correct option representing number of offspring showing parental phenotypic expression (pure tall with round seed and dwarf with wrinkled seed).

(A) 60       (B) 360       (C) 540       (D) 600

109. Match the Column I (Centres / regions) with Column II (Functions/role/location) and select the correct option.

| | Column I | | Column II |
|---|---|---|---|
| i. | Corpora quadrigemina | a. | Round swellings of midbrain |
| ii. | Hypothalamus | b. | Part of forebrain |
| iii. | Pons | c. | Canal passing through the midbrain |
| | | d. | Part of hind brain |

(A) i - d, ii - c, iii - a       (B) i - a, ii - b, iii - d
(C) i - a, ii - c, iii - b       (D) i - d, ii - b, iii - a

110. Given below are two statements:

**Statement I:** In bacteria, the mesosomes are formed by the extensions of plasma membrane.

**Statement II:** The mesosomes, in bacteria, help in DNA replication and cell wall formation.

In the light of the above statements, choose the most appropriate answer from the options given below:

(A) Both Statement I and Statement II are correct.

(B) Both Statement I and Statement II are incorrect.

(C) Statement I is correct but Statement II is incorrect.

(D) Statement I is incorrect but Statement II is correct.

111. Match the Column I with Column II and select the correct option.

| | Column I | | Column II |
|---|---|---|---|
| i. | Multicarpellary gynoecium | a. | Pistils are free |
| ii. | Syncarpous ovary | b. | Single pistil |
| iii. | Monocarpellary gynoecium | c. | Pistils are fused together |
| iv. | Apocarpous ovary | d. | More than one pistil |

(A) i - d, ii - c, iii - b, iv – a       (B) i - c, ii - d, iii - b, iv - a

(C) i - b, ii - a, iii - d, iv – c       (D) i - d, ii - a, iii - b, iv - c

112. Asthma is a respiratory disease caused by

   (A)  infection of trachea  (B)  infection of lungs

   (C)  bleeding into pleural cavity  (D)  inflammation of bronchi and bronchioles

113. Sequential order of nucleotides on template strand forming m-RNA synthesizing specific protein is given below. Based on it select the sequential t-RNA anticodon entering in the process of protein synthesis.

   Template:

   TAC GAC AAC CAC TTA ATT

   (A)  AUG CUG UUG GUG AAU UAA  (B)  UAC GAC AAC CAC UUA AUU

   (C)  TAC GAC AAC CAC TTA ATT  (D)  UTG CTG TTG GTG UUT TUU

114. Free living sporophyte is absent in _____.

   (A)  haplontic life cycle  (B)  diplontic life cycle

   (C)  haplo-diplontic life cycle  (D)  life cycle of *Fucus*

115. Match List-I with List-II.

| | List-I | | List-II |
|---|---|---|---|
| i. | Cytokine barriers | a. | Mucus coating of respiratory tract |
| ii. | Cellular barriers | b. | Interferons |
| iii. | Physiological barriers | c. | Neutrophils and Macrophages |
| iv. | Physical barriers | d. | Tears and Saliva |

   Choose the **correct** answer from the options given below:

   (A)  i – c, ii – a, iii – b, iv – d  (B)  i – b, ii – c, iii – a, iv – d

   (C)  i – b, ii – c, iii – d, iv – a  (D)  i – c, ii – a, iii – d, iv – b

116. Identify (i), (ii) and (iii) in the following reaction and choose the correct option.

   Fructose 1,6-bisphosphate
   (6 C)

   Triose Phosphate ← Triose Phosphate
   (i) → (ii)
   (3C)  (3C)

   (iii)

   (A)  i – 1,3-bisphosphoglyceric acid,  (B)  i – Glyceraldehyde-3-phosphate,

   ii – Dihydroxyacetone phosphate,  ii – Dihydroxyacetone phosphate,

   iii – Fructose-1,6-phosphate  iii – 1, 3-bisphosphoglyceric acid

   (C)  i – Fructose-1,6-bisphosphate,  (D)  i – Glyceraldehyde-3-phosphate,

   ii – 2-PGA,  ii – PEP,

   iii – PEP  iii – 2-PGA

117. Match the types of contraceptive methods in column I with their examples in column II.

| | Column I (Methods) | | Column II (Examples) |
|---|---|---|---|
| i. | Surgical | a. | Condom |
| ii. | Barrier | b. | Pills |
| iii. | Natural | c. | Tubectomy |
| iv. | Chemical | d. | Periodic abstinence |

Select the code for the correct answer from the options given below.

(A)  i – c, ii – a, iii – d, iv – b   (B)  i – c, ii – d, iii – a, iv – b

(C)  i – d, ii – c, iii – b, iv – a   (D)  i – b, ii – a, iii – c, iv – d

118. Read the following statements and choose the correct option.

i.  DCT is located in the medulla of the kidney.

ii.  Vasa recta runs parallel to Henle's Loop.

iii.  In cortical nephrons, the loop of Henle is very long.

iv.  The efferent arteriole emerges from the glomerulus.

   (A)  Statements i and iii are correct.

   (B)  Statements i and iii are incorrect.

   (C)  Statements iii and iv are correct.

   (D)  Statements i, ii and iv are incorrect.

119. Identify the correct order of tissues from outermost layer to innermost layer in the T.S of dicot root.

   (A)  Cortex → Epidermis → Endodermis → Pericycle → Pith

   (B)  Epidermis → Endodermis → Pericycle → Cortex → Pith

   (C)  Epidermis → Cortex → Endodermis → Pericycle → Pith

   (D)  Endodermis → Epidermis → Pericycle → Cortex → Pith

120. Following are some statements regarding sewage treatment.

i.  More the BOD, lower is the pollution in water.

ii.  Flocs are masses of bacteria associated with algal filaments.

iii.  Gases produced in anaerobic sludge digesters include methane, hydrogen sulphide and carbon dioxide.

iv.  The effluent from secondary treatment is generally released into natural water bodies like rivers and streams.

   The CORRECT statements are:

   (A)  i and ii   (B)  iii and iv

   (C)  ii and iv   (D)  i, ii and iv

121. Match Column I with Column II and select the correct options:

| | Column I | | Column II |
|---|---|---|---|
| i | Prosthetic group | a. | Hydrolase |
| ii | Metallic cofactor | b. | Catalyses joining of bonds like C-O, C-S, etc. |
| iii | Ligase | c. | Haem |
| iv | Lyase | d. | Catalyses removal of groups from substrates |
| | | e. | Zinc |

(A)    i – a, ii – e, iii – d, iv – b          (B)    i – c, ii – e, iii – b, iv – d

(C)    i – c, ii – a, iii – b, iv – d          (D)    i – e, ii – a, iii – d, iv – b

122. Given below are two statements:

**Statement I:** A transcription unit in DNA is defined primarily by the three regions: A promoter, the structural gene and a terminator.

**Statement II:** DNA-dependent RNA polymerase catalyses polymerization in the $3' \rightarrow 5'$ direction.

In the light of the above statements, choose the most appropriate answer from the options given below:

(A)    Statement I is true, statement II is false.

(B)    Statement II is true, statement I is false.

(C)    Both statement I and statement II are true

(D)    Both statement I and statement II are false

123. When a neuron is stimulated, the inner side of its axonal membrane _____.

(A)    becomes negatively charged          (B)    becomes positively charged

(C)    becomes neutral          (D)    fills with acetylcholine

124. Which one of the following is correct about constituents of blood?

(A)    Plasma = Blood – Lymphocytes          (B)    Serum = Blood + Fibrinogen

(C)    Lymph = Plasma + RBC + WBC          (D)    Blood = Plasma + RBC + WBC + Platelets

125. Given below are four statements pertaining to separation of DNA fragments using Gel Electrophoresis. Identify the INCORRECT statements.

i.    DNA is negatively charged molecule and so it is loaded on gel towards the anode terminal.

ii.    DNA fragments travel along the surface of the gel whose concentration does not affect movement of DNA.

iii.    Smaller the size of DNA fragment, larger is the distance it travels through it.

iv.    Pure DNA can be visualized directly by exposing to UV radiation.

The INCORRECT statements are:

(A)    i, ii and iv          (B)    i, iii and iv          (C)    i, ii and iii          (D)    ii, iii and iv

126. Match the columns and select the correct option:

| | Column I | | Column II |
|---|---|---|---|
| i. | *Physalia* | a. | Sea anemone |
| ii. | *Meandrina* | b. | Brain coral |
| iii. | *Gorgonia* | c. | Sea fan |
| iv. | *Adamsia* | d. | Portuguese man of war |

(A)   i – c, ii – b, iii – a, iv – d          (B)   i – d. ii – c. iii – b, iv – a

(C)   i – d, ii – b, iii – c, iv – a          (D)   i – b, ii – c, iii – a, iv – d

127. A plant produced 65 flowers. Ovary of each flower has 20 ovules. The maximum numbers of fruits and seeds that can be formed are, respectively?

(A)   65, 65                (B)   2600, 1300

(C)   65, 1300             (D)   65, 260

128. Which of the following are homologous structures?

(A)    Wings of bird and hands of human

(B)    Nails of human being and claws in animals

(C)    Wings of bird and wings of insect

(D)    Wings of bat and wings of cockroach

129. According to the chemiosmotic hypothesis, a proton gradient is formed when the number of protons _____ in the stroma and _____ in the lumen of the thylakoid, respectively.

(A)   increases, decreases          (B)   decreases, increases

(C)   decreases, remains unchanged          (D)   remains chaunnged, increases

130. **Assertion (A):** Genetically modified (GM) crops, such as Bt cotton, reduce the need for chemical pesticides by producing their own insect-repellent toxins.

**Reason (R):** The Bt toxin gene, cloned from Bacillus thuringiensis, is expressed in GM plants and remains inactive until ingested by specific insects, where it becomes toxic due to the alkaline pH of their gut.

Select the correct option:

(A)    Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.

(B)    Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(C)    Assertion is true, but Reason is false.

(D)    Assertion is false, but Reason is true.

131. Match the items in Column I with those in Column II.

|  | Column I |  | Column II |
|---|---|---|---|
| i. | Herbivores-Plants | a. | Commensalism |
| ii. | Mycorrhiza-Plants | b. | Mutualism |
| iii. | Sheep-Cattle | c. | Predation |
| iv. | Orchid (epiphyte) -Mango tree | d. | Competition |

Select the correct option from following:

(A) (i)-(c), (ii)-(b), (iii)-(d), (iv)-(a)

(B) (i)-(b), (ii)-(a), (iii)-(c), (iv)-(d)

(C) (i)-(a), (ii)-(c), (iii)-(d), (iv)-(b)

(D) (i)-(d), (ii)-(b), (iii)-(a), (iv)-(c)

132. Given below are two statements: one is labelled as Assertion A and other is labelled as Reason R:

**Assertion (A):** As we explore different areas, new organisms are being identified.

**Reason (R):** Vernacular names are chosen for nomenclature of newly found organisms.

In the light of above statements, choose the most appropriate answer from the options given below:

(A) Both assertion and reason are true and reason is the correct explanation of assertion.

(B) Both assertion and reason are true but reason is not the correct explanation of assertion.

(C) Assertion is true but reason is false.

(D) Both assertion and reason are false.

133. Match the diseases in column I with their corresponding symptoms in column II:

|  | Disease |  | Symptom |
|---|---|---|---|
| i. | Malaria | a. | Deformities of lower limbs and external genitals |
| ii. | Ringworm | b. | Blockage of intestinal passage |
| iii. | Filariasis | c. | Scaly lesions on skin, nails |
| iv. | Ascariasis | d. | Recurring chills and fever. |

(A) i – d, ii – c, iii – a, iv – b

(B) i – c, ii – a, iii – d, iv - b

(C) i – d, ii – b, iii – a, iv – c

(D) i – d, ii – c, iii – b, iv - a

134. Match the following columns and select the correct option.

|  | Column I |  | Column II |
|---|---|---|---|
| i. | Placenta | a. | Androgens |
| ii. | Zona pellucida | b. | Human Chorionic Gonadotropin (hCG) |
| iii. | Bulbo-urethral glands | c. | Layer of the ovum |
| iv. | Leydig cells | d. | Lubrication of the Penis |

|       | (i)  | (ii) | (iii) | (iv) |
|-------|------|------|-------|------|
| (A)   | (a)  | (d)  | (b)   | (c)  |
| (B)   | (c)  | (b)  | (d)   | (a)  |
| (C)   | (b)  | (c)  | (d)   | (a)  |
| (D)   | (d)  | (c)  | (a)   | (b)  |

135. During aerobic respiration the final electron acceptor is _____.

 (A) cyt b      (B) $NADH_2$      (C) water      (D) oxygen

136. Arrange the terms; respiration losses, net primary productivity and gross primary productivity starting with the one having the highest value to the one with lowest value for any ecosystem and choose the correct option.

 (A) Respiration losses → Net primary productivity → Gross primary productivity

 (B) Gross primary productivity → Respiration losses → Net primary productivity

 (C) Gross primary productivity → Net primary productivity → Respiration losses

 (D) Net primary productivity → Gross primary productivity → Respiration losses

137. Match the following parts of a nephron with their functions:

|       | Column I                        |     | Column II                                                 |
|-------|---------------------------------|-----|-----------------------------------------------------------|
| i.    | Descending limb of Henle's loop | a.  | Reabsorption of salts only                                |
| ii.   | Proximal convoluted tubule      | b.  | Reabsorption of water only                                |
| iii.  | Ascending limb of Henle's loop  | c.  | Conditional reabsorption of sodium ions and water         |
| iv.   | Distal convoluted tubule        | d.  | Reabsorption of ions, water and essential nutrients       |
|       |                                 | e.  | Promotes nutrient mobilisation                            |

Select the correct option from the following:

 (A) i – d, ii – a, iii – c, iv – b      (B) i – a, ii – c, iii – b, iv – d

 (C) i – b, ii – d, iii – a, iv – c      (D) i – a, ii – d, iii –b, iv – c

138. Arrange the following components (i – iv) of a woody dicot stem in the correct order, from the outermost to the innermost layer and select the correct option:

i. Secondary cortex      ii. Wood

iii. Secondary phloem      iv. Phellem

The correct order is:

 (A) iv, iii, i, ii      (B) iii, iv, ii, i

 (C) i, ii, iv, iii      (D) iv, i, iii, ii

139. The targeted gene in first clinical gene therapy coded for _____.

    (A) Guanine deaminase          (B) Cytosine deaminase

    (C) Thiamine deaminase         (D) Adenosine deaminase

140. During _____, proteins are synthesized in preparation for mitosis.

    (A) G2 Phase     (B) S Phase     (C) M Phase     (D) Prophase

141. Given below are two statements: one is labelled as Assertion A and other is labelled as Reason R:

    **Assertion (A):** Tropical rainforests are disappearing fast from developing countries.

    **Reason (R):** No value is attached to these forests because these are poor in biodiversity.

    In the light of above statements, choose the most appropriate answer from the options given below:

    (A) Both assertion and reason are true and reason is the correct explanation of assertion.

    (B) Both assertion and reason are true but reason is not the correct explanation of assertion.

    (C) Assertion is true but reason is false.

    (D) Both assertion and reason are false.

142. Identify the palindromic nucleotide sequence.

    (A)   5'CCTAGG3'          (B) 3'GCTAGC5'
          3'GGATCC5'               5'CAATCA3'

    (C)   5'TGTC3'             (D)   3'CGTACG5'
          3'ATAT5'                 5'GTATTC3'

143. From the statements given below, choose the one/s that correctly describe the phylum Annelida and select the correct option:

    i. Body is metamerically segmented.

    ii. The organisms are acoelomate.

    iii. Circulatory system is open.

    iv. Nephridia help in excretion and osmoregulation.

    (A) i. and iv.     (B) ii only.     (C) ii and iii.     (D) i, iii and iv.

144. When both the parents are of blood group AB, children could be of blood group either

    (A) A, B, AB or O          (B) A, B or AB

    (C) A or B                (D) A, AB or O

145. Myelin sheath is produced by _____.

    (A) Schwann cells and oligodendrocytes      (B) astrocytes and Schwann cells

    (C) oligodendrocytes and osteoclasts        (D) osteoclasts and astrocytes

146. Which one of these is NOT a eukaryote?

    (A) *Euglena*          (B) *Anabaena*

    (C) *Spirogyra*        (D) *Agaricus*

147. Identify INCORRECT statements from the following and select the correct option.

i. Edible portion in apple is thalamus.

ii. Denaturation of enzymes may result in loss of viability of seeds.

iii. Seedless fruits in grapes are formed due to double fertilization.

iv. Perisperm differs from endosperm in being haploid tissue.

Incorrect statements are

(A) i and iii      (B) i and ii      (C) i and iv      (D) iii and iv

148. Under a given concentration in blood, dissociation of oxyhaemoglobin will increase if

(A) pH of blood falls      (B) pH of blood rises

(C) $CO_2$ concentration in blood falls      (D) Free fatty acid concentration in blood falls

149. Match the following lists:

|  | List-I |  | List-II |
|---|---|---|---|
| i. | Erwin Chargaff | a. | Transforming principle |
| ii. | Frederick Griffith | b. | Nuclein |
| iii. | Alfred Hershey | c. | Ratio between A and T and that of between G and C |
| iv. | Colin MacLeod | d. | Biochemical nature of transforming principle |
|  |  | e. | DNA as the genetic material that is passed from virus to bacteria |

The correct match is

(A) i - c, ii - b, iii - d, iv - a      (B) i - c, ii - a, iii - e, iv - d

(C) i - b, ii - c, iii - a, iv - e      (D) i - a, ii - b, iii - c, iv - e

150. Given below are two statements:

**Statement I:** Viruses that infect plants have double stranded RNA.

**Statement II:** Viruses that infect animals have either ssRNA/dsRNA or dsDNA.

In the light of the above statements, choose the correct answer from the options given below:

(A) Only statement I is true.      (B) Only statement II is true.

(C) Both statements I and II are true.      (D) Neither of the statements is true.

151. Complete the following analogy.

Formation of Humus: Humification :: Process of release of inorganic nutrients on degradation of humus by microbes: _____

(A) Fragmentation      (B) Mineralization      (C) Leaching      (D) Denitrification

152. Which of the following STDs are NOT completely curable?

(A) Chlamydiasis, Syphilis, Genital warts      (B) HIV, Gonorrhoea, Trichomoniasis

(C) Gonorrhoea, Trichomoniasis, Hepatitis B      (D) Genital herpes, Hepatitis B, HIV infection

153. Match Column I (Plant growth regulators) with Column II (Function) and select the correct option.

| | Column I | | Column II |
|---|---|---|---|
| i. | Auxins | a. | Speed up the maturity period in conifers leading to early seed production |
| ii. | Gibberellins | b. | Causes respiratory climactic |
| iii. | Cytokinins | c. | Promote abscission of older mature leaves and fruits |
| iv. | Ethylene | d. | Helps to withstand desiccation |
| | | e. | Promotes nutrient mobilisation |

(A)  i – c, ii – d, iii – a, iv – b      (B)  i – e, ii – d, iii – b, iv – a

(C)  i – c, ii – a, iii – e, iv – b      (D)  i – d, ii – b, iii – e, iv – a

154. Drug called 'Heroin' is synthesized by:
(A)  glycosylation of morphine      (B)  nitration of morphine

(C)  methylation of morphine      (D)  acetylation of morphine

155. Match the following

| | List I | | List II |
|---|---|---|---|
| i. | Euryhaline | a. | Tolerant to wide range of temperatures |
| ii. | Stenohaline | b. | Restricted to narrow range of temperature |
| iii. | Eurythermal | c. | Tolerant to wide range of salinity |
| iv. | Stenothermal | d. | Restricted to a narrow range of salinity |

(A)  (i - a), (ii - b), (iii - c), (iv - d)      (B)  (i - c), (ii - d), (iii - a), (iv - b)

(C)  (i - c), (ii - b), (iii - a), (iv - d)      (D)  (i - a), (ii - d), (iii - c), (iv - b)

156. Lack of relaxation between successive nerve impulses or action potentials, resulting in sustained muscle contraction is known as _____.
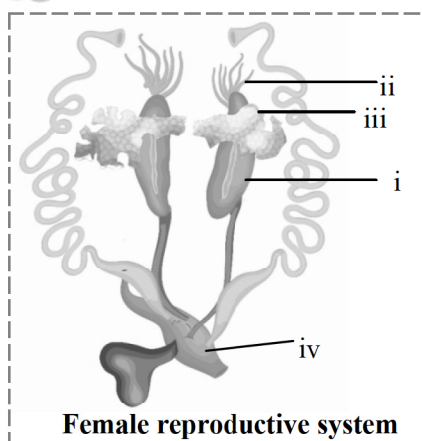(A)  tetany      (B)  dystrophy      (C)  spasm      (D)  fatigue

157. Given is a diagram of female reproductive system of Frog. Identify the label indicating the ovary and select the correct option:



**Female reproductive system**

(A)  i      (B)  ii      (C)  iii      (D)  iv

158. Which of the following is CORRECT regarding adrenaline?

i. Adrenal cortex secretes the hormone adrenaline.

ii. Adrenaline is secreted during stressful and emergency situations.

iii. Adrenaline stimulates the breakdown of glycogen into glucose.

iv. Adrenaline decreases the strength of heart contraction, heart beat and rate of respiration.

(A) i, ii and iii are correct.      (B) ii and iii are correct.

(C) ii and iv are correct.      (D) i and iii are correct.

159. Match the following RNA polymerases with their transcribed products:

| | Column I | | Column II |
|---|---|---|---|
| i. | RNA polymerase I | a. | tRNA |
| ii. | RNA polymerase II | b. | rRNA |
| iii. | RNA polymerase III | c. | hnRNA |

Select the correct option from the following:

(A) i – c, ii – b, iii – a  (B) i – a, ii – c, iii – b  (C) i – a, ii – b, iii – c  (D) i – b, ii – c, iii – a

160. Match the following and select the correct option.

| | Column I | | Column II |
|---|---|---|---|
| i. | Lipid | a. | Glutamic acid |
| ii. | Amino acid | b. | Glycerol |
| iii. | Protein | c. | Starch |
| iv. | Carbohydrate | d. | Collagen |

(A) i – b, ii – d, iii – c, iv – a      (B) i – b, ii – a, iii – d, iv – c

(C) i – a, ii – b, iii – c, iv – d      (D) i – c, ii – d, iii – a, iv – b

161. What type of human population is represented by the following age pyramid?

(A) Stable population

(B) Declining population

(C) Expanding population

(D) Vanishing population
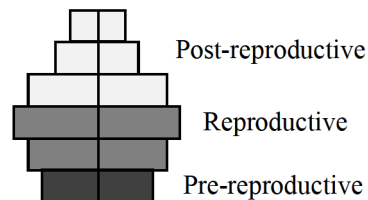


162. Blood pressure in the mammalian aorta is maximum during _____.

(A) diastole of the right ventricle      (B) systole of the left ventricle

(C) diastole of the right atrium      (D) systole of the left atrium

163. The factor that leads to Founder effect in a population is:

(A) Genetic drift

(B) Natural selection

(C) Genetic recombination

(D) Mutation

164. Given below are two statements

**Statement I:** When petals and sepals are not differentiated, it is known as 'Perianth'.

**Statement II:** The calyx whose sepals are fused is known as gamopetalous calyx.

In the light of the above statements, choose the correct answer from the options given below:

(A) Only statement I is correct

(B) Only statement II is correct

(C) Both statements I and II are correct

(D) Neither statement I nor II is correct.

165. Which of the following statement/s is/are true for spermatogenesis but do not hold true for oogenesis?

i. It results in the formation of haploid gametes.

ii. Differentiation of gamete occurs after the completion of meiosis.

iii. It is controlled by the Luteinising hormone (LH) and Follicle Stimulating Hormone (FSH) secreted by the anterior pituitary.

iv. It is initiated at puberty.

Choose the most appropriate answer from the options given below:

(A) ii, iii and iv only　(B) ii and iv only　(C) iv only　(D) ii only

166. Read the following statements regarding isolation and cutting of DNA.

i. To cut DNA with restriction enzyme it needs to be pure in form, free from RNA, protein, polysaccharides and lipids.

ii. RNA can be removed by protease enzyme.

iii. DNA separated as suspension can be removed by spooling.

iv. DNA can be precipitated by adding warm ethanol.

The WRONG statements are:

(A) i, ii

(B) iii, iv

(C) i, iii

(D) ii, iv

167. In $C_4$ plants, Calvin cycle operates in

(A) stroma of chloroplasts of bundle sheath cells

(B) grana of chloroplasts of bundle sheath cells

(C) grana of chloroplasts of mesophyll cells

(D) stroma of chloroplasts of mesophyll cells

168. Biopiracy is related to the use of which of the following?

(A) Bioresources

(B) Traditional knowledge

(C) Biomolecules and genes

(D) All of these

169. Besides paddy fields, cyanobacteria are also found inside vegetative part of _____.

(A) *Pinus*      (B) *Cycas*      (C) *Equisetum*      (D) *Psilotum*

170. Match the components of List–I with List–II.

| | List-I | | List-II |
|---|---|---|---|
| i. | Operon | a. | Binding of repressor proteins |
| ii. | Operator | b. | Binding site for RNA polymerase |
| iii. | Promoter | c. | Inactivated by inducer |
| iv. | Repressor | d. | Binding to polynucleotide phosphorylase |
| | | e. | Polycistronic structural gene regulation |

(A) i – c, ii – e, iii – d, iv – a      (B) i – e, ii – c, iii – a, iv – b

(C) i – e, ii – a, iii – b, iv – c      (D) i – b, ii – d, iii – c, iv – e

171. Match the following columns and select the correct option.

| | Column I | | Column II |
|---|---|---|---|
| i. | Pituitary hormone | a. | Steroid |
| ii. | Epinephrine | b. | Neuropeptides |
| iii. | Endorphins proteins | c. | Peptides, proteins |
| iv. | Cortisol | d. | Biogenic amines |

(A) i - c, ii - d, iii - b, iv - a      (B) i - d, ii - c, iii - a, iv - b

(C) i - c, ii - d, iii - a, iv - b      (D) i - d, ii - a, iii - b, iv - c

172. Find the odd one out with respect to events during breathing:

(A) Relaxation of diaphragm

(B) Ribs and sternum lift up

(C) Intra-pulmonary pressure < Atmospheric pressure

(D) Increase in thoracic volume

173. A biocontrol agent to be a part of an integrated pest management should be

(A) species-specific and inactive on nontarget organisms

(B) species-specific and symbiotic

(C) free living and broad spectrum

(D) narrow spectrum and symbiotic

174. A wolf has just eaten a lamb. When tiger saw the wolf, it attacked the wolf. The tiger in ecological terms is a _____.

(A) producer      (B) primary consumer

(C) secondary consumer      (D) tertiary consumer

175. The main function of the Golgi apparatus is

    (A)    trapping the light and transforming it into chemical energy

    (B)    formation of spindle fibres

    (C)    post translational modification of proteins

    (D)    ATP synthesis

176. $X^h$ is the chromosome with gene for haemophilia and $X^H$ is the chromosome with normal gene. Which of the following individuals will act as carrier for haemophilia?

    (A)    $X^hY$          (B)    $X^HY$          (C)    $X^hX^h$          (D)    $X^hX^H$

177. Read the following statements regarding the pelvic girdle.

    **Statement I:** Pelvic girdle consists of four coxal bones.

    **Statement II:** Each coxal bone is formed by the fusion of three bones – ilium, ischium and pubis.

    Choose the correct option from the following:

    (A)    Statement I is true but statement II is false.      (B)    Statement II is true but statement I is false.

    (C)    Both statement I and statement II are true.      (D)    Both statement I and statement II are false

178. Which of the following organisms are known as chief producers in the oceans?

    (A)    Cyanobacteria      (B)    Diatoms          (C)    Dinoflagellates    (D)    Euglenoids

179. Bees, bumblebees, birds and bats carry out pollination of plant. From point of view of conservation of biodiversity, this can be considered as

    (A)    narrowly utilitarian value of biodiversity      (B)    broadly utilitarian value of biodiversity

    (C)    ethical value of biodiversity              (D)    aesthetic value of biodiversity

180. Given below are two statements:

    **Statement I:** *Rauwolfia vomitoria* shows genetic variation in terms of concentration and potency of the chemical reserpine.

    **Statement II:** Variation in terms of concentration and potency of the chemical reserpine in *Rauwolfia vomitoria* is an example of species diversity.

    In the light of the above statements, choose the most appropriate answer from the options given below:

    (A)    Only statement I is correct

    (B)    Only statement II is correct

    (C)    Both statements I and II are correct

    (D)    Neither statement I nor statement II are correct.